

## RAIL CAR LID LIFTER

### Field of the Invention

5 This invention relates to the field of material handling and more particularly to apparatus to lift, remove, store and replace rail car lids.

### Background of the Invention

10 Railroad cars such as gondolas that carry various size metal coils are covered with one or two metal lids. The top of some cars reach five and half feet from the railroad track. The top of the load lifting attachment (handle) on the top of the lids may be fourteen to fifteen feet above ground. In the normal operation of loading rail cars with large metal coils which can weigh fifteen to twenty-two tons, a crane is  
15 used, usually with a four legged bridle, to remove the lids from the rail cars. These lids are then placed far enough from the crane so coils can be delivered within reach of the crane to load the rail car. The crane operator can not do this unassisted. To attach the bridle, a man must climb onto the lid, which is inherently dangerous since these lids do not provide catwalks. This rigging is time consuming and labor intensive  
20 as well.

It is, therefore, an object of this invention to provide apparatus that will safely and economically permit removal of the lids without rigging a crane for this purpose. Furthermore, rail yards in which this type of work is carried out have many fork lift trucks which are adapted to transport, lift and lower loads, ordinarily on skids or  
25 pallets, in the course of loading and unloading such heavy materiel as metal coils.

It is a further object of this invention to provide an accessory to such a fork lift truck that will permit the operator to engage, lift, transport and lower to temporary storage a rail car lid without the intervention of anyone other than the fork lift operator or use of any other piece of material handling apparatus.

30 A still further object of the invention is to provide an accessory that will not require any modification of the fork lift truck such as removal or replacement of the forks in order to engage in rail car lid lifting.

Brief Description of the Invention

The invention which solves the objects stated above is an adjunct to an  
5 industrial fork lift truck comprising a boom adapted to engage all common forms of  
railcar lid handles and of adequate strength and length mounted on a frame of  
adequate height that has a palette-like base adapted for handling by a fork lift truck.  
It comprises a base configured as a palette adapted for fork truck handling, a frame  
mounted thereto, and a boom mounted to the frame at one end of the boom and  
10 having generally at the other end at least one fitting for engaging a lid handle wherein  
the assembly of said boom, frame and base freely stands on the base when not in use  
thereby providing convenient means for removing storing and replacing rail car lids  
and for storing the lifter itself while the fork truck is otherwise engaged.

In another embodiment for use with a ram truck that handles coils of sheet  
15 metal, the palette-like base carries a collar extending through the base through which  
the ram of the truck can be passed. Locking means are provided. This preferred  
embodiment is configured so that it can be handled by a fork truck as well as a ram  
truck.

20 BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a side elevational view of the railcar lid remover of the invention.

Figure 2 is a perspective view of the invention in use with a fork truck (partially  
shown) with the boom of the invention engaged with the handle of a railcar lid.

25 Figure 3 is a partial perspective view of a preferred boom without the end cap.  
Figure 4 is a partial perspective view of the preferred boom showing an alternate  
lifting fitting the boom having a broken-away section to show lifting hooks .

Figures 5a, 5b, 5c, 5d are partial perspective views of typical car lid handles.

Figure 6 is a side elevational view of a further embodiment adapted for use by a ram  
30 truck.

Figure 7 is a partial end view of the embodiment of Figure 6.

## DETAILED DESCRIPTION OF THE INVENTION

The railcar lid remover or lifter 10 of the invention, as seen in Figure 1, is a self-standing unit which can be stored convenient to an area where gondola cars and the like are unloaded by cranes. The structure stands on base 12 which is configured 5 as a palette for handling by a standard industrial fork truck commonly used in loading yards. Base 12 is fabricated from members, preferably steel, of sufficient strength and thickness to withstand the loads encountered in working with the various rail car lids of metal which may weigh as much as 1 ton. A welded structure is preferred for the base and for fabricating and joining all elements of the structure with the exception of 10 certain fittings which are removably fastened to a boom 16.

Mounted on base 12 is frame 14, also of sufficient strength to withstand the forces of compression, bending and twisting encountered in service. It is high enough so that boom 16 which is mounted to frame 14 can be lifted by a fork truck 20 within 15 the limits of its vertical lift distance to a level clearing the top of a lidded railcar standing on the tracks. Boom 16 is long enough to permit reaching the centerline of a railcar 17 when the fork truck has approached relatively close to the side of the car but not so long that an overturning moment is created in use or when the device is standing alone in storage. Stay 18 and standoff 19 may be provided to minimize 20 boom bending when a lid is picked up. Safety strap 22 is provided so that the operator of the fork can insure that the lid remover remains in place on the forks when in use especially during transport without a load. It readily is released when the operator drops the lid lifter 10 for storage and returns the fork truck 20 to other activities.

25 Figure 2 shows a typical lid removal activity (the replacement procedure essentially is the reverse). Rail car 17, here a gondola, is covered by one or more lids 26. These have centrally located handles 28. Unfortunately, the railroad industry has not settled on a single standard design for a rail car lid handle. Four differing units 20 are common and these are shown in Figures 5a, 5b, 5c, and 5d. For convenience boom 16 carries fittings 30 and 32 which are configured so that any one of the four types of handles can be engaged. Fitting 30 is a saddle on the upper surface of boom 16. This is suited to the handle of Figure 5d. Limit stop 32 is spaced a short

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distance away on the top surface of boom 16 between fitting 30 and the end of the boom above frame 14. This prevents a lid from sliding along the boom too far toward the fork truck if the operator errs. Fitting 34 is a pair of hooks on the lower surface of boom 16 useful for any variety of handle 102 which does not allow clearance for the boom between the top of the lid and the bottom of the handle or between upright member thereof. If ever other handle designs appear, it would be simple to provide suitable fittings.

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~~Lifter 10 is shown in Figure 2 with base 12 engaged on forks 36 of fork truck~~

20. These have been lifted high enough for boom 16 to be inserted into handle 102

10 ~~and then lifted so that fitting 30 engages and then lifts handle 102 and lid 26.~~

For lids having handles of the type shown in Figure 5d, it is preferred to modify saddle fitting 30 by replacing it with plug fitting 23. Suitable fasteners, not shown, hold the plug fitting 23 in place. An advantage of this arrangement in use is that plug 23 fits into the inside of the top of the handle and prevents it from swiveling. An elastomeric, or other cushioning material, pad 25 may be secured to the upper surface of plug fitting 23.

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A preferred lid remover has the following dimensions :

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Base 12 is 9 inches high by 5 foot 8 inches on a side and fabricated from 5/8<sup>th</sup> inch steel plate. Two opposing sides are fabricated 8 inch by 6 and 1/2 inch by 1/2 inch I-beams with one side cut away. The remaining flange is welded in place on the underside of the base with the flange facing in. Two facing plates, with 7 inch high by 9 inch cutouts ("pockets") for entry of the forks, are welded one inch from the end of the base to the underside and each is braced by two one inch thick triangular steel gussets.

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Frame 14 comprises two 8 inch by 8 inch by 3/8 inch box tubes 15 and 13 that are 7 feet long and welded to base 12 slightly in from opposite ends along the centerline between the cutouts. Welded on top of the two box tubes, is boom 16 which is fabricated from a modified 8 inch by 6 and 1/2 inch by 1/2 inch I-beam with 1/2

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inch plates for the sides as shown in Figure 3. A cap is welded on each end of boom 16. Fish plates <sup>21</sup> reinforce the welded joints. Saddle 30 is removably bolted on top of boom 16 about one foot from the end and stop <sup>32</sup> 26 is spaced about 1 foot 3 inches farther in. An elastomeric pad 25 may be cemented on the top surface of plug 23.

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In use, car 17 is spotted. An operator drives fork truck 20 to where lid lifter 10 stands in storage, adjusts the height of the forks 36, aims and drives the forks into engagement in the base 12 which is then lifted slightly for transport after safety strap 22 is fastened to the fork truck 20. The operator approaches the side of rail car 17 and aims boom 16 into handle <sup>24</sup> 102 by lifting and/or tilting the lift mechanism of the truck and driving the truck forward. A further slight lift engages saddle fitting <sup>28</sup> 30 with handle <sup>28</sup> 102. Additional lifting raises lid 26 away from car 17 and the fork truck 20 with its load can be backed out of the way. Car 17 can then be emptied as is customary using a crane while lid 26 is held with the fork truck or stored on the ground. When the car 17 is empty, lid 26 then can be returned and lowered into position there. The fork truck operator then can disengage boom 16 from lid 26 and back away. At will, lid lifter 10 can be stored by transporting it to a selected spot, lowering it to the ground and pulling out the fork or ram.

INS A2 > Details of preferred component-structures are shown in the figures. These are designer choices and other configurations and materials of construction could be used to perform the illustrated and described functions within the strength and geometric limitations imposed by the intended service.